

# CONTINUOUS IMPROVEMENT PROJECT DATABASE

## DIVISION 2 PROJECTS

Project Name	Project Description	Division	Project Year	Contact Name	Contact Number	Project Category
Attenuator Upgrade	<p>Within the Roadside Environmental Pesticide program two of our challenges are water supply and traffic control. We send out advance warning vehicles and quite often an attenuator. We will sometimes send out a water truck to act as a nurse truck for the sprayer. This is generally a flatbed with a 1000 gallon or larger water tank.</p> <p>We have long wondered why not place a water tank on the attenuator in place of the ballast it carries. After being told there could not be a loose tank on the truck, we responded that it would be attached to the body of the truck. Then we found out there is a minimum weight for the attenuator. Next we discovered there was a maximum weight that was less than the GVWR of the truck on which the attenuator was mounted. D-2 Equipment Superintendent Buddy Dixon contacted the attenuator manufacturer and they helped us by finding that there was not a problem with the maximum weight until we got over 67,000 pounds. This helped a lot since the GVWR on the truck we use is 33,000 pounds. Then we discovered that the height of the attenuator from pavement level could not change more than a specified amount with the tank empty or full. After research we found this to not be a problem as we were within the manufacturer's guidelines.</p> <p>The equipment shop removed the existing ballast from the attenuator truck and installed our 1,000 gallon tank along with enough weight to keep the truck within minimum guidelines when the tank is empty. After this truck was retrofit, we prepared to place a tank on a second attenuator. We planned on using a 1500 gallon tank. The height of the tank proved to be too high for the attenuator unit to fold up, so we thought we were back to a 1000 gallon tank. Brian Dixon of the Greenville Equipment Shop said he could build us a tank from steel that would hold 1500 gallons and would be heavy enough that no additional ballast would be needed. This unit has proven to be much more effective than the 1000 gallon tank as we can fill our smaller sprayer three times instead of two and the 1500 gallon tank is approximately the same size as our larger trucks.</p> <p>The approximate \$2,500.00 cost of placing the tank on the attenuator is easily offset by the \$281.60 daily savings* of not having another truck and employee on this task. * Based on an 8 hour day.</p>	Div 2	2009	John Wells	(252) 830-3146	Dollar Savings
Sign Rack	<p>Traffic Services needed an organized way to transport highway signs in the sign trucks that would reduce the time it takes to access the right sign and protect the signs from damage caused by signs rubbing together.</p> <p>A sign rack made out of a 12 x 12 x 1 ½" piece of solid plastic with ¼ inch deep slots ¼ inch wide apart was fabricated. The new sign rack can be placed in the side storage areas of a sign truck. This enables the storage of 29 signs in a rotating rack.</p> <p>The new sign rack maintains an inventory of signs, protect signs from damage and make them readily accessible. The sign rack saves time by reducing the time it takes to access signs and retrieve needed signs.</p>	Division 2 - Traffic Services	2009	Wesley Brazelton		Cycle Time Reduction
Tractor Mounted Brush Sprayer	<p>Problem: Our dormant stem spray program is performed in the months of January, February and March. During this time the highway shoulders are generally wet, creating a problem for our spray trucks. Woody brush and tree limbs are gradually overtaking the shoulders, creating a safety problem and making mowing the shoulders difficult. We needed a sprayer that would get better traction and still reach the spray target.</p> <p>Solution: We already had a 4-wheel drive tractor and a tractor-mounted sprayer with a front mounted boom that was used for curb and gutter spraying, but we needed a way to elevate the spray head to reach the target area. TS3 Vann Sparrow and TS2 Greg Rayburn had the idea to modify the curb and gutter sprayer with an extension, a lift device and an actuator (device to tilt the spray head). They also used spray nozzles used in another operation. This helped to hold down costs. The nozzles produce a wide spray pattern. This modified sprayer has made it possible to access areas that previously were very difficult to spray.</p>	Operations - Division 2	2007	John Wells	(252) 830-3146.	Customer Service
Post Ladder / Turner	<p>Problem: As part of sign maintenance, periodically a sign has to be repositioned during installation, or due to wind events or a vehicle accident. In the past, the sign department utilized a post turner to accomplish this task. Utilization of a ladder was also required during this task. Too much time was spent gathering tools and setting up a ladder to perform this task. A new way to minimize the time it takes to reposition a sign or replace a sign without having to get out all the tools and a ladder was needed.</p> <p>Solution: A new post turner was developed that grips the 4 x 4 and incorporates a small steel step welded to the handle that can be used as a step to reach the sign.</p>	Operations - Division 2	2006	Jim Evans	(252) 830-3490	Cycle Time Reduction

Bolt Breaker	<p>Problem: During the course of day to day operations, traffic services is required to replace or repair road signs due to damage or change in signage. In order to complete these task the employees have to remove the current sign by loosening the nuts which are typically rusty. This is achieved by using a pair of vice-grips. The vice-grips slip off the rusty nut causing employees to readjust the tool resulting in a time consuming process.</p> <p>Solution: A bolt breaker was developed using a 9/16 deep well socket welded to a handle approximately 12 in length to give the user plenty of grip. Once placed over the nut, the 9/16 socket will not slip off and the user does not need to adjust the tool.</p>	Operations - Division 2	2006	Jim Evans	(252) 830-3490	Cycle Time Reduction
Safety Awareness Wristband Promotion	<p>Awareness wristbands have recently become very popular. These bands are used to raise awareness of various diseases and other items of special interest.</p> <p>The Safety Workshop Committee in Division 2 wanted to find a good way to promote safety and get all Division employees involved. Since a lot of employees were already wearing various awareness wristbands, the committee decided that the use of wristbands with a safety motto would help promote safety awareness throughout the Division.</p> <p>Orange wristbands with NCDOT DIV. 2 NO ONE GETS HURT inscribed on them were ordered and distributed to all employees.</p>	Operations-Division 2	2005	John Wells	(252) 830-3146.	Safety Improvement
Woody Construction Debris to Useable Lumber	Over the past year, logs were accumulated from roadway cleaning debris and stored at the Pitt County sandpit. Rather than paying a landfill a tipping fee to dispose of these trees, a local person with a portable sawmill was contracted to come to the pit and saw the logs into usable lumber. When about 20 logs were accumulated the portable sawmill was called. These 20 logs yielded 100 - 2" x 6" x 16' boards, and 40 - 2" x 10" x 16' boards. The sawyer charged \$500 for his labor.	OPERATIONS - DIVISION 2	2002	Woody Jarvis	(252) 946-3689.	Customer Service
Asphalt Roller Types	The Division Bituminous unit has been using a classcode 2510 Asphalt roller. It is not designed for or held up well in seal type operations. It only compacts 3' of roadway at a time creating long waits for crews and lost production time.. Replaced by a classcode 2507 vibratory roller which has increased overall production. This roller covers 4' in one pass and is twice as fast. It is also designed for aggregates used by the Bituminous unit.	OPERATIONS - DIVISION 2	2002	Cleve Woolard	(252) 830-3146.	Customer Service
Hot Spray Thermo	Division Two were reaching the end of their life span. The remaining roadway life was approximately 2-3 years about half the life of normal thermoplastic pavement markings. Painting of the existing surfaces was an option but would require several remarking operations before the roadway was resurfaced. Through contacts with vendors, a new product called hot spray thermo was reviewed. This product provided a life span that matched the remaining pavement life and provided a product comparable with standard long life thermoplastic. Based on our investigation we elected to utilize this product. Additionally, to enhance visibility during both daylight and night we elected to increase the existing 4 line width to 6.	OPERATIONS - DIVISION 2	2002	Steve Hamilton	(252) 695-2044	Dollar Savings
US 70 Conversion from Bahiagrass to Centipede	The Division Two Roadside Environmental crew has begun a multiyear conversion of the shoulders and median sections of US-70 in Jones and Craven counties to centipede grass from bahia. The bahia requires mowing 6-7 times a year, while the centipede will only need to be mowed about twice. Centipede will take 2-3 years to become fully established but will create savings after that. With the use of specialized herbicides, sod seeding and fertilization we are trying to expedite the process	OPERATIONS - DIVISION 2	2002	John Wells	(252) 830-3146.	Dollar Savings
A Boom Mower Improvement	<p>There has been a problem with debris getting stuck between the screen/plexiglass and glass on boom mowers, which impairs the operator's visibility. Objects thrown by the mower have also shattered the cab's glass windows and doors.</p> <p>The Beaufort County Maintenance unit has investigated the feasibility of ordering boom mowers with shatterproof glass, which would eliminate the need to retrofit the cab with an expanded metal screen or plexiglass over the cab's glass. It would improve the operator's visibility as well as make it easier and safer to clean the glass.</p>	OPERATIONS DIVISION 2	2001	R. A. Lewis	(252) 946-3054	Labor Hour Savings
Portable Traffic Lights	For several Bridge Maintenance projects, it is required for the lane to be impassable 24 hours a day and these projects may take weeks or months. With a 5-man minimum crew size and a workload requiring several projects at a time, flagging is sometimes not an option. Portable traffic lights have helped with this problem and have become almost a necessity in day-to-day operations. One set of traffic lights is currently owned and another set of traffic lights is on rent. These lights work well in high volume, limited sight distances, and work 24 hours a day without a break. With this versatility, both sets of traffic lights stay busy all of the time. These traffic lights cut costs on extensive projects, but they also increase safety in our work zones and cut down on man-hours as well.	OPERATIONS DIVISION 2	2001	T. A. Edgerton	(252) 830-3490	Dollar Savings

Portable Depth Finder	<p>At times in Bridge Maintenance work, stream depths have to be determined or check for scour in fast moving, deep water. In the past, we have had two methods of doing this. The first method is to use a level rod, and there are two problems with using this method. The 1st problem is that you are limited to 25', and from the top of the bridge, you may not be able to reach the bottom. The 2nd problem with this method is that if you can reach the bottom, the fast moving water may break your level rod. The 2nd method of checking stream depth is to tie a heavy weight to a tape measure and lower it to the bottom for a depth. The problem with this method is that the weighted tape measure often moves down stream losing accuracy in a high flow situation.</p> <p>As a solution to this problem, I constructed the Portable Depth Finder to aid in determining a profile of the bed. The device was assembled in less than 30 minutes, and for about \$130, will instantly determine the water depth. Level rods are at least \$130 each and do not last long in high flow conditions, and can only determine limited depths.</p>	OPERATIONS DIVISION 2	2001	T. A. Edgerton	(252) 830-3490	Dollar Savings
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